PRELIMINARY DESCRIPTION AND RATING

IGNITRON GL-6504

The GL-6504 is a double-grid igniton designed for railroad locomotive rectifier service. In this service twelve tubes will supply d-c power for a 4000-horsepower locomotive.

A coaxial cathode-current return provides magnetic shielding. The tube also features baffles in the mercury pool to assure contact between the mercury and the ignitor points during swaying of the equipment.

A companion tube, the GL-6509 igniton, has been designed to supply the auxiliary power requirements of applications which use the 6504 as the main power source.

TECHNICAL INFORMATION

GENERAL

Electrical

Cathode Excitation - Cyclic
Cathode-Spot Starting - Ignitor
Number of Electrodes
  Main Anodes 1
  Main Cathodes 1
  Igniters 3
  Shield Grids 1
  Control Grids 1
Arc Drop
  At 1000 Amperes Peak 20 ± 2 Volts
  At 2000 Amperes Peak 25 ± 2 Volts

Mechanical

Envelope Material - Metal
Net Weight 95 Pounds
Tube Mounting - See Outline Drawing

Thermal

Type of Cooling - Water
  Inlet Water Temperature, minimum 30 Centigrade
  Outlet Water Temperature, maximum 55 Centigrade
Water Flow
  At Continuous Rated Average Current, minimum 10 Gallons per Minute
  At No Load, minimum 1 Gallon per Minute
Recommended Temperature Range 40 to 45 Centigrade
Characteristics for Water Cooling
  Water Temperature Rise, maximum 6.5 Centigrade
  Pressure Drop at 10 Gallons per Minute, maximum 1.5 Pounds per Square Inch
MAXIMUM RATINGS

Power-Rectifier Service *, Continuous Duty

Maximum Peak Anode Voltage
Inverse: 4000 Volts
Forward: 100 Volts

Maximum Anode Current
Peak: 1250 Amperes
Average
Continuous: 350 Amperes
2 Hours: 400 Amperes
15 Minutes: 500 Amperes
5 Minutes: 700 Amperes
1 Minute: 800 Amperes

Fault
Forward Direction: 15000 Amperes
Reverse Direction: 30000 Amperes
Maximum Duration of Fault Current: 0.15 Seconds

* Ratings are for Zero Phase-Control Angle at Frequency of 25 Cycles

Ignitor Requirements

Volt-Ampere-Time Requirements — See Curve K-9033883

Maximum Inverse Voltage: 5 Volts
Maximum Current
Root Mean Square: 15 Amperes
Average: 2.0 Amperes
Maximum Averaging Time: 10 Seconds

Shield-Grid Voltage
Peak Forward: 200 Volts
Peak Inverse: 200 Volts

Shield-Grid Current
Peak Forward: 0.2 Amperes
Peak Inverse: 0.2 Amperes

Control-Grid Voltage
Peak Forward: 200 Volts
Peak Inverse: 100 Volts

Control-Grid Current
Peak Forward: 0.4 Amperes
Peak Inverse: 0.4 Amperes

June 28, 1954

TUBE DEPARTMENT
GENERAL ELECTRIC COMPANY
SCHENECTADY 5, NEW YORK
IGNITOR VOLT-AMPERE REQUIREMENTS
SEALED-IGNITRON RECTIFIERS

THE IGNITOR FIRING CIRCUIT SHOULD BE DESIGNED TO OPERATE WITHIN THE SHADED AREA.

PEAK IGNITOR VOLTAGE IN VOLTS

PEAK IGNITOR CURRENT IN AMPERES

MINIMUM REQUIRED

MAXIMUM ALLOWED

MINIMUM PULSE WIDTH

1500 m SEC